

Appendix B

**ABBREVIATED CURRICULUM
VITAE**

OF

**DR. JOSEPH S. KRAEMER
&
RICHARD O. LEVINE**

DR. JOSEPH S. KRAEMER

Dr. Kraemer holds the title of Director at LECG, LLC, a consulting firm with expertise in the economic and public policy issues that affect industries undergoing structural change. For over 25 years, he has worked with, and served as counselor to, senior management at communications, media, and high-tech companies in Asia, Europe, and the Americas.

Dr. Kraemer has been consulting on digital television issues since 1996. In particular, he co-authored the 1998 book *Digital Television in a Digital Economy: Opportunities for Broadcasters* and organized a series of on-the-record roundtable discussions during the early years (1996-1999) on the transition to digital television.

More recently, Dr. Kraemer prepared an analysis for the NAB Television Board on the business implications of a decision to replace or supplement the "8VSB" transmission standard incorporated in the FCC's digital television rules. This study was based, in part, on extensive discussions with local broadcasters, network officials, and representatives of consumer electronics firms regarding the status and dynamics of the rollout of digital television in the United States. He also testified (March 2001) before the Senate Commerce, Science, and Transportation Committee on ways of expediting the digital transition. Recent relevant speeches Dr. Kraemer has made include "Telephony, Television, & the Internet: Convergence Trends and Realities" and "Digital Television in the United States: Long Fuse & Big Bang."

He serves on the faculties of both the Georgetown University McDonough School of Business and the Kogod Business School of American University where he specializes in e-commerce strategy. He is on several boards, including Exigent (NASDAQ) and the Center for Telecommunications Management (University of Southern California). The Progress & Freedom Foundation (Washington, D.C.) has designated him a Senior Fellow.

Joseph S. Kraemer

EDUCATION

Ph.D., University of Michigan, 1969

M.B.A., George Washington University, 1978

M.A., University of Michigan, 1967

B.S., Georgetown University, 1966

PRESENT POSITION

LECG, LLC, October 2000.

Director

Established in October 2000, LECG, LLC provides strategic and economic consulting services to a variety of business enterprises. The firm specializes in industries that are undergoing structural transformation due to market, regulatory, and/or technological changes with particular emphasis on telecommunications, broadcasting, energy, and financial services, as well as associated law firms and capital market institutions. LECG now has a professional staff of more than 300 professionals in ten offices on four continents. The firm's business model consists of the combination of recognized experts who have impeccable industry, academic, or government credentials with a world class staff, most of whom have MBAs and/or Ph.Ds.

PREVIOUS EXPERIENCE

PUTNAM, HAYES & BARTLETT/HAGLER BAILLY, 1999-2000

Senior Vice President

EDS/A.T.KEARNEY, 1994-1999

Vice President

DELOITTE & TOUCHE, 1989-1994

Partner (Retired)

TOUCHE ROSS & CO., 1974-1989

Partner

MERRILL LYNCH, 1972-1974

Investment Research and Advisor

U.S. ARMY, 1966-1972
Captain

PROFESSIONAL

Certified Public Accountant (CPA)
Certified Management Consultant (CMC)
Society of Telecommunications Consultants (STC)

ACADEMIC

Dr. Kraemer serves as an Adjunct Professor and guest lecturer at Georgetown University's McDonough School of Business in Washington, DC where he teaches "**Electronic Commerce Strategy & Policy.**" He is also associated with the Kogod School of Business at American University where he teaches the "**Fundamentals of Electronic Commerce,**" a required course for upper classmen.

BOARD MEMBERSHIPS

Exigent, Inc. (Melbourne, FL): public company; member of Audit & Investment Committee.

Center for Telecommunications Management: University of Southern California.

Linguatek, Inc. (McLean, VA): member of Advisory Board.

SELECTED CONSULTING EXPERIENCE: Strategy and Financing

- **Broadband Consumer and Business Market Assessment.** Conducted primary market research to identify addressable markets for cable TV, Internet access, and telephony in a major U.S. city; client architecture was hybrid fiber-coax (HFC); developed penetration strategies for each segment and for the total market, including optimal service packaging and pricing.
- **Digital Television Strategy (DTV).** In an effort to accelerate the rollout of DTV in the United States, conducted interviews with broadcasters, consumer electronics companies, networks, and FCC staff; analyzed enhanced capabilities of DTV over analog; developed multiple rollout scenarios; assessed relative significance of critical factors affecting rollout; developed business case for 8VSB broadcast modulation standard.
- **Hybrid Fiber-Coax Business Plan.** Assessed the business plan for the client's board and senior management; reviewed key assumptions especially pricing, penetration, major cost categories, and cash flow; recommended multiple changes that were made prior to rollout.

- **Digital Television (DTV).** Conducted senior management roundtables on DTV technology and rollout; prepared a book for publication by the National Association of Broadcasters (NAB) on use of DTV spectrum to transmit revenue-generating data carriers.
- **Wireless Broadband Business and Market Plan.** Prepared a plan for a national wireless broadband business; assessed both communications and entertainment services with priority assigned to supplying access and connectivity for business customers; included P&L and balance sheet pro formas.
- **Residential Video Market Analysis.** Analyzed the fundamentals of the entertainment video market (through 2003); emphasized advertising vs. subscription support, wired vs. wireless delivery, and analog vs. digital media; provided in-depth comparison of cable, DBS, LMDS, MMDS, and standard over-the-air systems.
- **Due Diligence.** For a London-based bank consortium, directed a due diligence assessment of a new LEO mobile satellite services company; capital at risk exceeded \$3.0 billion; conducted full review of operating systems, business systems, space, handset, and ground systems as well as program management processes and capabilities; identified risks to cost, budget, and performance specifications; prepared capital draw down schedule tied to key milestones; provided support for IPO, high-yield debt, and bank structured financing.
- **Diversification and Investment Strategy.** Directed a case team that analyzed investment options in the United States; the scope included local, long distance, wireless, competitive access, entertainment, business information services and the Internet; the core issue was how to leverage investments to become a full service provider in the United States; performed for a major European carrier.
- **Aerospace Market Opportunity and Competitive Analysis.** Assessed the market for satellite-based communications services and the activities of competitors in the services business for an aerospace manufacturer of satellites and launch vehicles; objective was to evaluate potential entry into the services business.
- **Churn Reduction and Customer Profitability.** For a cellular operator, analyzed the profitability of customer “cohorts” (i.e., all new subscribers grouped by month over a two-year period); netted variable costs against monthly revenues to calculate the contribution towards amortization of customer acquisition costs and economic breakeven per cohort; used the data to model the economic effects of changing the mix of customers, pricing plans, distribution channels and other specific churn reduction initiatives.
- **Due Diligence.** For equity investors, directed due diligence on a Russian-French satellite venture; scope covered manufacturing, systems engineering, testing, and launch for a four-satellite GEO system; also included program management and contractual risk mitigation activities; identified risks, their probability of occurrence, and the potential impact on cost, schedule, and performance.

- **Telecommunications Market Entry by Power Companies.** Led several analyses of the optimal strategy for power companies to enter telecommunications markets; scope included all options including, facilities-based, resale, and leasing towers and rights-of-way; also covered bundling telecommunications and energy at the retail level.
- **Dark Fiber Business Strategy.** Directed a case team to evaluate the options available to a natural gas pipeline company that wanted to deploy and sell fiber optic cables along its inter-city rights-of-way; evaluated demand for, and supply of, fiber along specific routes; identified costs and benefits of entry; recommended potential partners for our client among cable and telephone companies.
- **Corporate Restructuring and Market Assessment.** Directed a study of five global businesses: (1) international public switched service; (2) direct-to-home video; (3) video contribution and distribution; (4) very small aperture terminal services; and (5) consumer multimedia/Internet services; based on the concept that the market drives strategy which then drives structure; recommended a partial spin-off of a global telecommunications business unit.
- **Market Entry and Diversification Strategy.** Assisted a major multistate electric utility to develop an entry strategy into various segments of the telecommunications industry to include wireless, broadband, and switched voice with both a wholesale and retail component to the strategy; included partnership options at the line of business level.
- **Merger & Acquisition Analysis.** Led a strategic assessment for an interexchange carrier; potential candidates were information services/ technology companies; focus was upon synergies of a carrier with an IT company; scope included niche markets and dominant IT firms.
- **Global Competition.** Directed a Delphi study utilizing a panel of North American, Japanese, and European experts on the subject of global competition among international carriers; objective was to forecast potential winners and their strategies.

SELECTED CONSULTING EXPERIENCE: Operations and Systems

- **Pre- and Post-Merger Integration.** Adapted a template for use by an acquiring carrier to manage pre-merger and post-merger activities; the template covers 90 days before closing and 18 months after closing and allows management to control the process to improve the probability of meeting the objectives of the transaction.
- **Joint Process Improvement and Supplier Relationships.** Assisted an aerospace company to redefine and restructure first and second tier vendor relationships to improve the efficiency of its satellite manufacturing process; objective was process improvement to facilitate bidding on high volume LEO and MEO contracts.

- **Billing Operations Improvement.** Led a project to increase the efficiency of a special billing unit responsible for national and regional corporate accounts at a wireless carrier; scope included manual and automated interfaces, organizational responsibilities, work breakdown structure, management reporting, and conversion to CD and electronic invoicing.
- **Order Entry Efficiency.** Re-engineered the order entry and processes for a wireless carrier to reduce the elapsed time from weeks to days; productivity improvement allowed an increase in the number of orders processed at the same staff and subcontractor levels.
- **Fiber Optic Urban Deployment.** Structured the real estate penetration strategy for the national rollout of a fiber optic-based Competitive Local Exchange Carrier (CLEC); focus was on negotiating with property managers and owners to accelerate penetration into target buildings across urban U.S.; also included a wireless broadband strategy to supplement the fiber infrastructure.
- **Local Exchange Order Entry Process and Systems.** For an interexchange carrier, reengineered order entry process for the local service line of business; reduced average elapsed time per order by 50 percent.
- **New Venture Business Launch.** Assisted the management of a wireless subsidiary of a major carrier to enter the market after license award; developed core processes (e.g., concept-to-market; sales-to-service management; usage-to-cash; customer contact-to-restoration) and support systems necessary to begin operations and accelerate entry into the market for PCS services.
- **Broadband Provisioning.** Directed a review of T-1 installation, provisioning, and restoration; study resulted in major changes to operational support for broadband services.

SELECTED RECENT SPEECHES AND PRESENTATIONS

- **Participated as a *facilitator and commentator* at management retreats focused upon the impacts of competition, revenue growth, and new product development with the associated requirements for rapid organizational change;** worked with Alcatel, Ameritech, AT&T, Bell Atlantic, B.C. Tel, Bell Canada, Call Net, Canadian Broadcasting Corporation, Compaq, Edmonton Telephone, EDS, GTE, Hekimian, Kodak, Maritime Telephone (MT&T), Microsoft, NAB, NYNEX, Nortel, Sprint (interexchange and local exchange), Telesystem, Telstra, and Telus/AGT.
- **Quoted frequently in major publications and the trade press including:** *The Wall Street Journal*, *USA Today*, *Business Week*, *Time*, *Barron's*, *The New York Times*, *The Economist*, *The Los Angeles Times*, and *The Globe & Mail*.

- **“Facing the Realities of the Digital Television Age,”** Panelist at the National Association of Broadcasters (NAB) Annual Conference, Las Vegas, NV (April 2001).
- **“The Dawn of the Digital Television Era: What Is & What Could Be,”** to the State Leadership Conference of Television Broadcasters, Washington, D.C. (March 2001).
- **“Telecommunications Industry Investment: The Importance of Due Diligence”;** at the *Supercomm* Conference, Atlanta (June 2000).
- **“Telephony, Television & The Internet: Convergence Trends and Realities”;** Sponsored by the Board of the Canadian Broadcasting Corporation (CBC), Montreal (May 2000).
- **“The E-Commerce Revolution: Implications for the U.S. Telecommunications Industry”;** keynote speaker at a conference on industry strategies for the 21st century; hosted by the Ivey School of Business of the University of Western Ontario, Ottawa (April 2000).
- **“The Next-Generation Internet Protocol Network: A Market-Based Strategic Overview”;** lead speaker and host at the TeleManagement World Conference, Las Vegas (December 1999).
- **“E-Commerce: The Next Wave”;** at the Conference on Telecommunications and Information Markets (COTIM '99) (September 1999).
- **“Technology Push & Marketing Pull: Migrating to a Data World”;** at the International Engineering Consortium’s Semi-Annual Executive Institute, Jackson Hole (July 1999).
- **“Digital Television in a Digital Economy”;** lead speaker at the *Annual Futures Forum* of the National Association of Broadcasters (NAB); invitation-only audience considered to be technology visionaries in the broadcast industry, Monterrey (March 1999).
- **“The Business Case for High Bandwidth Satellites and Orbital Technology”;** at the *Telecosm Conference* organized by George Gilder and *Forbes* magazine, Lake Tahoe (September 1998).
- **“Digital Television in the United States: Long Fuse & Big Bang”;** served as co-chairman of a workshop on the future of digital television given for Congressmen and their staffs at the Rayburn House Office Building (July 1998).
- **“Satellite System Investment Opportunities: Get There, Get Share, Make Money”;** at the *Space and Satellite Finance Conference* organized by the International Research Institute, New York (May 1998).

- **“Vision versus Reality: The Rollout of Digital Television in the United States”**; at a conference sponsored by *Broadcasting & Cable Magazine*, New York (May 1998).
- **“Implications for Broadcast Video Competition of Broadband Technology”**; at the *Communications & Connectivity 98 Conference* of the National Association of Broadcasters, Las Vegas (April 1998).

SELECTED RECENT PUBLICATIONS

- **“Beyond the Network: The E-Commerce Opportunity for the U.S. Telecommunications Industry,”** accepted for publication in the International Engineering Consortium’s *Annual Review of Communications* (2000), scheduled for release summer 2001.
- **“Global Telecom Trends: A U.S. Perspective,”** included in *Strategies for the 21st Century*, published by the Richard Ivey School of Business at the University of Western Ontario (May 2001).
- **“CLEC Distress: Potential Opportunity for Utilities?”** with Richard Levine, published by the United Telecom Council (UTC) (January 2001).
- **“The Market-Driven Economics of Voice over Internet Protocol,”** included in *Carrier IP Telephony 2000*, published by the International Engineering Consortium (July 2000).
- **“The Convergence of Energy and Telecommunications,”** *Perspectives* (4th Quarter 1999).
- **“Tentative Steps Toward New Local Loop Technology,”** included in *adapting to New Realities: The Canadian Telecommunications Industry*, published by the Richard Ivey School of Business at the University of Western Ontario (Fall 1998).
- **Digital Television in a Digital Economy**, for the National Association of Broadcasters, with Richard O. Levine (April 1998).
- **“A Primer on Technology Convergence: Causes & Effects,”** *Annual Review of Communications* 1997 by the International Engineering Consortium.
- **“The Future of Digital TV: Market Rollout Scenarios and Prospects for a More Unified Technology,”** participated in and edited the transcript of a management roundtable (February 1997).
- **“A Roundtable Review of the Future of Digital Television: The Implications for Consumers, Broadcasters, Cable Television, and Telephone Companies,”** served as organizer and transcript editor (Fall 1996).

- **“An Assessment of the Telecommunications Act of 1996 and Its Impact on Competition and the Converging Communications, Information and Entertainment Industries,”** with Richard O. Levine, A.T. Kearney (March 1996).

DISPUTE RESOLUTION AND EXPERT WITNESS EXPERIENCE

Qualified as an expert witness by courts, arbitration panels, mediators, and regulatory commissions. Scope of testimony has dealt with subject matter such as industry conditions at a specific point in time, valuation of businesses, and calculation of damages.

Also testified before legislative bodies on public policy matters, including the nature and extent of competition in specific telecommunications and media sectors. Regulatory/legislative appearances and/or filings include:

- American Arbitration Association
- Arkansas Public Service Commission
- California Commission on State Government Organization and Economy
- California Public Utilities Commission
- Florida: Committee of the State House of Representatives
- Federal Communications Commission (FCC)
- Florida Public Service Commission
- Illinois Commerce Commission
- Indiana Utility Regulatory Commission
- Kansas State Corporation Commission
- Michigan Public Service Commission
- Missouri Public Service Commission
- Montgomery County (MD) County Council
- New York Public Service Commission
- Ohio State: Legislative Committees (House and Senate)
- Oklahoma Corporation Commission
- Public Utilities Commission of Ohio
- Public Utility Commission of Texas
- U.S. House of Representatives, Committee on Small Business

- U.S. Senate Commerce Committee
- Utah Public Service Commission
- Wisconsin Public Service Commission

Participated as an expert witness in *Wiltel, Inc. vs. SNET* (mediation) and *USWest vs. Teleconnect* (litigation), as well as in a class action shareholder suit involving an interexchange carrier, two arbitrations involving pay phone contracts, a suit alleging theft of high-technology trade secrets, a dispute over the meaning of provisions in a senior executive's non-compete clause, an arbitration between an agent and an IXC over responsibility for order entry/billing errors, two suits over disclosure adequacy by telecommunications companies that went bankrupt, two contract disputes involving sales of cellular service at retail stores, and a shareholder suit concerning management actions in the CLEC industry. Almost all commercial litigation cases involved calculation of damages based on case-specific facts and industry conditions.

RICHARD O. LEVINE

Richard O. Levine is a Director in LECG's Washington, D.C. office. He has over 15 year's consulting experience with special expertise in market, technology, and regulatory issues as they affect strategic business decisions, including entry into new markets. His clients include telecommunications and electric power providers in North America. He has also assisted carriers and government organizations in the Pacific Rim, Latin America, and Eastern Europe concerning the development of telecommunications competition. Most recently, he has focused on issues related to "last mile" wired and wireless broadband services, including issues related to the introduction of digital television. He is a co-author of *Digital Television in a Digital Economy: Opportunities for Broadcasters* (1998).

Mr. Levine also assists parties to dispute resolution proceedings, particularly concerning the regulatory and market background in which the disputed conduct took place. Prior to entering consulting, Mr. Levine served as Director of Policy Planning at the U. S. Department of Justice's Antitrust Division, where he participated in the drafting and implementation of the AT&T Divestiture Decree. Mr. Levine has a J. D. degree from the Harvard Law School and an A. B. (economics) from Columbia University.

Richard O. Levine

EDUCATION

J.D., Harvard Law School, 1974

A.B., (Economics), Columbia University, 1971

PRESENT POSITION

LECG, LLC, October 2000

Director

PREVIOUS EXPERIENCE

PUTNAM, HAYES AND BARTLETT/HAGLER BAILLY, 1999-2000

Vice President

A. T. KEARNEY/EDS, 1994-1999

Principal

TOUCHE ROSS/DELOITTE & TOUCHE, 1985-1994

Senior Manager

ANTITRUST DIVISION, U. S. DEPARTMENT OF JUSTICE

Director, Office of Policy Planning, 1981-85

Deputy Director, Office of Policy Planning, 1979-81

Attorney, Evaluation Section, 1974-79

SELECTED CONSULTING AND DISPUTE RESOLUTION EXPERIENCE

- Develop analysis of issues related to global deployment of digital television using COFDM and 8 VSB modulation standards as part of study to determine whether U. S. broadcasters should reaffirm existing U.S. transmission standard for digital television.
- Supported the efforts of a working group developing the post-privatization distribution strategy of an international satellite consortium; developed an analysis of the customer proprietary information requirements necessary to support establishment of a retail distribution organization; analyzed the regulatory implications of certain most-favored-customer provisions and the organizational procedures necessary to implement them.

- On behalf of a electric utility considering building a “voice, video, and Internet” fiber optic-coax cable residential network, prepared an analysis of the regulatory and franchise issues affecting the venture in the target geographic markets.
- Provided expert support to incumbent local exchange carriers regarding antitrust litigation arising from network unbundling obligations.
- In the context of arbitration against a long distance carrier, developed a “primer” on the payphone industry and its regulation, on behalf of the long distance carrier, to facilitate the arbitrators’ understanding of the industry.
- Prepared report in litigation by a long distance carrier against a former employee concerning whether, at the time an employment agreement was signed, the Internet could be understood to be “related” to “long distance services” with respect to a post-employment restriction.
- In conjunction with the National Association of Broadcasters, developed an analysis of the opportunities for broadcasters arising from the datacasting capabilities of digital television.
- Led an engagement to assist a Canadian telecommunications provider apply for a broadband Local Multipoint Communications System license (at 28 GHz) to provide voice, multimedia and video services; supervised overall application
- preparation as well as chapters concerning compliance with government licensing objectives, market size and demand, interconnection and financial analysis.
- Served as project leader in developing a U.S. “multimedia” strategy for a major foreign telecommunications carrier. The primary focus of the project was on electronic commerce and (a) analyzed market and technology trends; (b) set out a recommended strategy for the U.S. market; and (c) identified a range of candidate firms with which the client might seek to ally.
- Served as the project leader in evaluation of an electric utility company’s plan to enter into a joint venture with a Competitive Local Exchange Carrier to offer local and long distance telecom services to both in-region and out-of-region customers. The evaluation comprised (a) checking the reasonableness of assumptions of the client’s financial model; (b) conducting a high-level review of the planned support systems and operational modes for the new business lines; and (c) identification of the major risk factors going forward associated with these services.
- Led team developing a business case analysis for a Korean telecommunications firm considering becoming a full-service domestic and international carrier in Korea; analyzed market, cost and network interconnection issues; let team developing more detailed plan for domestic long distance business.
 - Part of a team that developed a comprehensive strategic framework for Canada’s international carrier to prepare for the introduction of competition, analyzed strategic implications of technological and regulatory change on the

Canadian international telecommunications marketplace.

- As part of comprehensive studies of telecommunications network infrastructure for New Jersey board of Public Utilities (funded by New Jersey's exchange carriers) and Pennsylvania Public Service Commission (funded by Pennsylvania's exchange carriers), responsible for analysis of future network requirements, including ISDN and high bandwidth capabilities, in an environment of regulatory reform, including the role of cable TV networks.
- Assisted an independent telephone company in developing a switching strategy process in light of changing technology and market conditions, and the phone company's service area characteristics.
- Assisted a major Mexican carrier to develop policies toward interconnection of competing carriers in response to government requirements to open market to long distance competition.
- On a retainer basis, assisted a Pacific Rim national telecommunications carriers in following regulatory developments in the United States, to help understand issues and approaches that might confront the client carrier as competition was introduced into its home country.
- Assisted a U.S. Regional Bell Holding Company to conduct an analysis of affiliate transactions between regulated and non-regulated subsidiaries to permit the holding company to identify and correct potential issues of regulatory concern.
- Prepared analyses and conducted briefings for U.S. and foreign carriers on regulatory/antitrust policy outlook, market trends, technological development and other factors generating strategic issues for telecommunications companies.
- In conjunction with privatization efforts, conducted work sessions with officials of telecommunications carriers in Bulgaria and Hungary concerning pricing and revenue generating strategies enabled by network modernization.
- Managed comprehensive analysis for overseas telecommunications carrier of effects of divestiture in U.S., 1984-1988, including impact on prices, service, quality, network evolution, and rural areas.

SELECTED GOVERNMENT EXPERIENCE

- Aided Assistant Attorney General Baxter in negotiating and drafting the AT&T Divestiture Decree. Conducted negotiations with Bell representatives, and participated in drafting of Justice Department pleadings Previous regarding issues arising from the plan of reorganization, including LATAs, intercompany contracts, equal access, Bellcore, and line-of-business restrictions.
- Assisted in preparation of Antitrust Division regulatory filings regarding access charges, carrier tariff, and other telecommunication issues. Served as antitrust liaison to the

National Communications System and its council of Representative, the National Telecommunications and Information Administration, and the Federal Communications Commission.

- Involved in negotiations with Bell RHCs and in developing Antitrust Division responses to petitions for line-of-business waivers under the MFJ.

RECENT PUBLICATIONS

“CLEC Distress: Potential Opportunities for Utilities?” (with Joseph Kraemer), published by the United Telecom Council (UTC) (January 2001).

“Soaps, Sitcoms, and Data: Digital Television Opens Up New Broadband Pipeline,” *Legal Times*, May 3, 1999, page S42.

Digital Television in a Digital Economy: Opportunities for Broadcasters, (with Joseph Kraemer), in conjunction with the National Association of Broadcasters (1998).

PROFESSIONAL

Bar Memberships

- District of Columbia
- U.S. District Court for the District of Columbia
- U.S. Court of Appeals for the District of Columbia
- Supreme Court of the United States

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EDUCATION

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Investment Research and Advisor

U.S. ARMY, 1966-1972

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Linguatek, Inc. (McLean, VA): member of Advisory Board.

SELECTED CONSULTING EXPERIENCE: Strategy and Financing

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- **Diversification and Investment Strategy.** Directed a case team that analyzed investment options in the United States; the scope included local, long distance, wireless, competitive access, entertainment, business information services and the Internet; the core issue was how to leverage investments to become a full service provider in the United States; performed for a major European carrier.
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- **Due Diligence.** For equity investors, directed due diligence on a Russian-French satellite venture; scope covered manufacturing, systems engineering, testing, and launch for a four-satellite GEO system; also included program management and contractual risk mitigation activities; identified risks, their probability of occurrence, and the potential impact on cost, schedule, and performance.

- **Telecommunications Market Entry by Power Companies.** Led several analyses of the optimal strategy for power companies to enter telecommunications markets; scope included all options including, facilities-based, resale, and leasing towers and rights-of-way; also covered bundling telecommunications and energy at the retail level.
- **Dark Fiber Business Strategy.** Directed a case team to evaluate the options available to a natural gas pipeline company that wanted to deploy and sell fiber optic cables along its inter-city rights-of-way; evaluated demand for, and supply of, fiber along specific routes; identified costs and benefits of entry; recommended potential partners for our client among cable and telephone companies.
- **Corporate Restructuring and Market Assessment.** Directed a study of five global businesses: (1) international public switched service; (2) direct-to-home video; (3) video contribution and distribution; (4) very small aperture terminal services; and (5) consumer multimedia/Internet services; based on the concept that the market drives strategy which then drives structure; recommended a partial spin-off of a global telecommunications business unit.
- **Market Entry and Diversification Strategy.** Assisted a major multistate electric utility to develop an entry strategy into various segments of the telecommunications industry to include wireless, broadband, and switched voice with both a wholesale and retail component to the strategy; included partnership options at the line of business level.
- **Merger & Acquisition Analysis.** Led a strategic assessment for an interexchange carrier; potential candidates were information services/ technology companies; focus was upon synergies of a carrier with an IT company; scope included niche markets and dominant IT firms.
- **Global Competition.** Directed a Delphi study utilizing a panel of North American, Japanese, and European experts on the subject of global competition among international carriers; objective was to forecast potential winners and their strategies.

SELECTED CONSULTING EXPERIENCE: Operations and Systems

- **Pre- and Post-Merger Integration.** Adapted a template for use by an acquiring carrier to manage pre-merger and post-merger activities; the template covers 90 days before closing and 18 months after closing and allows management to control the process to improve the probability of meeting the objectives of the transaction.
- **Joint Process Improvement and Supplier Relationships.** Assisted an aerospace company to redefine and restructure first and second tier vendor relationships to improve the efficiency of its satellite manufacturing process; objective was process improvement to facilitate bidding on high volume LEO and MEO contracts.

- **Billing Operations Improvement.** Led a project to increase the efficiency of a special billing unit responsible for national and regional corporate accounts at a wireless carrier; scope included manual and automated interfaces, organizational responsibilities, work breakdown structure, management reporting, and conversion to CD and electronic invoicing.
- **Order Entry Efficiency.** Re-engineered the order entry and processes for a wireless carrier to reduce the elapsed time from weeks to days; productivity improvement allowed an increase in the number of orders processed at the same staff and subcontractor levels.
- **Fiber Optic Urban Deployment.** Structured the real estate penetration strategy for the national rollout of a fiber optic-based Competitive Local Exchange Carrier (CLEC); focus was on negotiating with property managers and owners to accelerate penetration into target buildings across urban U.S.; also included a wireless broadband strategy to supplement the fiber infrastructure.
- **Local Exchange Order Entry Process and Systems.** For an interexchange carrier, reengineered order entry process for the local service line of business; reduced average elapsed time per order by 50 percent.
- **New Venture Business Launch.** Assisted the management of a wireless subsidiary of a major carrier to enter the market after license award; developed core processes (e.g., concept-to-market; sales-to-service management; usage-to-cash; customer contact-to-restoration) and support systems necessary to begin operations and accelerate entry into the market for PCS services.
- **Broadband Provisioning.** Directed a review of T-1 installation, provisioning, and restoration; study resulted in major changes to operational support for broadband services.

SELECTED RECENT SPEECHES AND PRESENTATIONS

- **Participated as a *facilitator and commentator* at management retreats focused upon the impacts of competition, revenue growth, and new product development with the associated requirements for rapid organizational change;** worked with Alcatel, Ameritech, AT&T, Bell Atlantic, B.C. Tel, Bell Canada, Call Net, Canadian Broadcasting Corporation, Compaq, Edmonton Telephone, EDS, GTE, Hekimian, Kodak, Maritime Telephone (MT&T), Microsoft, NAB, NYNEX, Nortel, Sprint (interexchange and local exchange), Telesystem, Telstra, and Telus/AGT.
- **Quoted frequently in major publications and the trade press including:** *The Wall Street Journal*, *USA Today*, *Business Week*, *Time*, *Barron's*, *The New York Times*, *The Economist*, *The Los Angeles Times*, and *The Globe & Mail*.

- **“Facing the Realities of the Digital Television Age,”** Panelist at the National Association of Broadcasters (NAB) Annual Conference, Las Vegas, NV (April 2001).
- **“The Dawn of the Digital Television Era: What Is & What Could Be,”** to the State Leadership Conference of Television Broadcasters, Washington, D.C. (March 2001).
- **“Telecommunications Industry Investment: The Importance of Due Diligence”;** at the *Supercomm* Conference, Atlanta (June 2000).
- **“Telephony, Television & The Internet: Convergence Trends and Realities”;** Sponsored by the Board of the Canadian Broadcasting Corporation (CBC), Montreal (May 2000).
- **“The E-Commerce Revolution: Implications for the U.S. Telecommunications Industry”;** keynote speaker at a conference on industry strategies for the 21st century; hosted by the Ivey School of Business of the University of Western Ontario, Ottawa (April 2000).
- **“The Next-Generation Internet Protocol Network: A Market-Based Strategic Overview”;** lead speaker and host at the TeleManagement World Conference, Las Vegas (December 1999).
- **“E-Commerce: The Next Wave”;** at the Conference on Telecommunications and Information Markets (COTIM '99) (September 1999).
- **“Technology Push & Marketing Pull: Migrating to a Data World”;** at the International Engineering Consortium’s Semi-Annual Executive Institute, Jackson Hole (July 1999).
- **“Digital Television in a Digital Economy”;** lead speaker at the *Annual Futures Forum* of the National Association of Broadcasters (NAB); invitation-only audience considered to be technology visionaries in the broadcast industry, Monterrey (March 1999).
- **“The Business Case for High Bandwidth Satellites and Orbital Technology”;** at the *Telecosm Conference* organized by George Gilder and *Forbes* magazine, Lake Tahoe (September 1998).
- **“Digital Television in the United States: Long Fuse & Big Bang”;** served as co-chairman of a workshop on the future of digital television given for Congressmen and their staffs at the Rayburn House Office Building (July 1998).
- **“Satellite System Investment Opportunities: Get There, Get Share, Make Money”;** at the *Space and Satellite Finance Conference* organized by the International Research Institute, New York (May 1998).

- **“Vision versus Reality: The Rollout of Digital Television in the United States”;** at a conference sponsored by *Broadcasting & Cable Magazine*, New York (May 1998).
- **“Implications for Broadcast Video Competition of Broadband Technology”;** at the *Communications & Connectivity 98 Conference* of the National Association of Broadcasters, Las Vegas (April 1998).

SELECTED RECENT PUBLICATIONS

- **“Beyond the Network: The E-Commerce Opportunity for the U.S. Telecommunications Industry,”** accepted for publication in the International Engineering Consortium’s *Annual Review of Communications* (2000), scheduled for release summer 2001.
- **“Global Telecom Trends: A U.S. Perspective,”** included in *Strategies for the 21st Century*, published by the Richard Ivey School of Business at the University of Western Ontario (May 2001).
- **“CLEC Distress: Potential Opportunity for Utilities?”** with Richard Levine, published by the United Telecom Council (UTC) (January 2001).
- **“The Market-Driven Economics of Voice over Internet Protocol,”** included in *Carrier IP Telephony 2000*, published by the International Engineering Consortium (July 2000).
- **“The Convergence of Energy and Telecommunications,”** *Perspectives* (4th Quarter 1999).
- **“Tentative Steps Toward New Local Loop Technology,”** included in adapting to *New Realities: The Canadian Telecommunications Industry*, published by the Richard Ivey School of Business at the University of Western Ontario (Fall 1998).
- **Digital Television in a Digital Economy,** for the National Association of Broadcasters, with Richard O. Levine (April 1998).
- **“A Primer on Technology Convergence: Causes & Effects,”** *Annual Review of Communications* 1997 by the International Engineering Consortium.
- **“The Future of Digital TV: Market Rollout Scenarios and Prospects for a More Unified Technology,”** participated in and edited the transcript of a management roundtable (February 1997).
- **“A Roundtable Review of the Future of Digital Television: The Implications for Consumers, Broadcasters, Cable Television, and Telephone Companies,”** served as organizer and transcript editor (Fall 1996).